

CURRENT RESEARCH AND DEVELOPMENT IN BIOTECHNOLOGY ENGINEERING AT IIUM

VOLUME I

Editors:

Suleyman Aremu Muyibi
Mohammed Saedi Jami
Zaki Zainudin



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(VOLUME I)

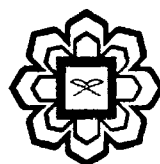
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CHAPTER 16

COMPARATIVE STUDIES OF *MORINGA OLEIFERA* AND ALUMINIUM SULPHATE AS COAGULANTS IN TURBIDITY REMOVAL FROM SURFACE WATER

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ABSTRACT

Studies were carried out to investigate the performance of processed *Moringa oleifera* seeds compared with that of Aluminium Sulphate (Alum) in the removal of turbidity from surface water. The results of residual turbidity of 2.29 NTU and 1.63 NTU, pH value of 7.03 and 5.81, Conductivity of 296 $\mu\text{S}/\text{cm}$ and 57.4 $\mu\text{S}/\text{cm}$, and Chemical Oxygen Demand (COD) of 8 mg/L and 13 mg/L for processed *Moringa oleifera* and Alum, respectively, for the treated river water with low turbidity of 44.2 NTU by using the *Moringa oleifera* and Alum were all found to have residual turbidity within the drinking water standard guidelines set by WHO. The results showed that processed *Moringa oleifera* seeds is a good natural coagulant to replace the Alum.

Keywords: turbidity removal, processed *Moringa oleifera* seed, aluminium sulphate.

INTRODUCTION

Water is life and every human depends on water to survive. The main source of water is rivers, which are highly turbid particularly during the rainy season. The technique for treating water involves the removal of the solid matter (turbidity), generally done using coagulants that are added to raw water. Many coagulants are widely used in conventional water treatment processes for potable water production. These coagulants can be classified into inorganic coagulant, synthetic organic polymer and naturally occurring coagulant (Muyibi *et al*, 2005). Inorganic salt “Alum” (Aluminium Sulphate ($\text{Al}_2(\text{SO}_4)_3$) is the most widely used coagulant in water treatment (Van Benchosten *et al* ; Boisvert, *et al*. 1997; Najm, *et al*1998). The use of *Moringa oleifera* can offer an alternative option to these coagulants. *Moringa oleifera* is environmentally friendly and is important for the production of edible vegetable oils, improvement of soil fertility. Today’s world is emphasizing on the natural products, and there is therefore the need to introduce another natural product , processed *Moringa oleifera* seeds for treating water that can replace chemical coagulants like Aluminium Sulphate, Ferric Chloride etc.